

REMARKS/ARGUMENTS

I. Status of Claims

- a)** Claims 21-23, 33-40 and 43-50 remain pending for review.
- b)** Claims 1-7, 10-13, 31-32 and 41 are canceled.
- c)** Claims 8-9, 14-20, 24-30 and 42 are withdrawn.
- d)** Claims 21, 33-35 and 38-40 are currently amended.
- e)** Claims 44-50 are new.
- f)** Claims 21 and 46 are the independent claims.
- g)** Claim 40 was objected to under 37 C.F.R. § 1.75(c) for improper dependent form.
- h)** Claims 21, 33 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller et al. (U.S. Patent No. 6,245,508) (hereinafter Heller) in view of Goldstein et al. (U.S. Patent No. 4,584,075) (hereinafter Goldstein).
- i)** Claims 22 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein as applied to claim 21 above, and further in view of Baselt (U.S. Patent No. 5,981,297) (hereinafter Baselt).
- j)** Claim 34 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein as applied to claim 21 above, and further in view of Bier (U.S. Patent No. 4,040,940) (hereinafter Bier).
- k)** Claims 36 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein as applied to claim 21 above, and further in view of Dyson et al (U.S. Patent No. 4,889,606) (hereinafter Dyson).

- l)** Claims 38-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein as applied to claim 21 above, and further in view of Lazar (U.S. Patent No. 5,290,825) (hereinafter Lazar).
- m)** Claim 41 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein as applied to claim 21 above, and further in view of Hsu et al. (U.S. Patent No. 5,028,657) (hereinafter Hsu).
- n)** Claim 43 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heller in view of Goldstein and Baselt as applied to claim 22 and 23 above, and further in view of Kurahashi et al. (U.S. Patent No. JP63315115) (hereinafter Kurahashi).

II. Claim Objections and Claim Amendments

- a) Applicants request reconsideration of the objection of claim 40 and favorable consideration of the claims..**

Applicants thank the Examiner for identifying improper dependent form of claim 40 at page 3, line 15 to page 4, line 4 of the Office Action. Applicants have amended claims 39 and 40 to correct the improper dependent form and submit that no new matter has been added by way of these amendments. Accordingly, Applicants respectfully request withdrawal of the objection and favorable consideration of claims 39 and 40.

Applicants respectfully submit that claims 21, 33-35 and 38-40 are amended, claim 41 is cancelled, claims 44-50 are new, and that no new matter has been added by way of these amendments. Applicants request favorable consideration of the claims.

III. Claim Rejections

a) Applicants request reconsideration of the rejection of claims 21-23, 33-40 and 43 under 35 U.S.C. § 103(a) since the combination of Heller and Goldstein does not show, disclose, teach or suggest a plurality of isolated channels.

Claims 22-23, 33-40 and 43 directly or indirectly depend from claim 21. Claim 21 recites "...a plurality of isolated channels..."

The Office Action asserts at page 5, lines 16-18 that Heller discloses "...a plurality of channels formed from wells of a microplate (...column 10, lines 5-9 and 17-40 and Fig. 2A..." However, the combination of Heller and Goldstein fails to show, disclose, teach or suggest each and every feature of the claims. This is apparent, assuming *arguendo* the Office Action's characterization of Heller is correct, at least since FIG. 2A of Heller does not disclose isolated channels. This is also apparent, assuming *arguendo* the Office Action's characterization of Heller is correct, at least since Heller would not be modified to include isolated channels in light of the principle of operation described at FIGS. 2A-2B.

Insofar as the combination of Heller and Goldstein fails to show, disclose, teach or suggest each and every feature of claim 21, *prima facie* obviousness under 103 cannot be established for claims 21-23, 33-40 and 43. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 21-23, 33-40 and 43.

b) Applicants request reconsideration of the rejection of claims 21-23, 33-40 and 43 under 35 U.S.C. § 103(a) since the combination of Heller and Goldstein does not show, disclose, teach or suggest a plurality of isolated gaps.

Claims 22-23, 33-40 and 43 directly or indirectly depend from claim 21. Claim 21 recites "...a plurality of isolated channels..."

The Office Action acknowledges at page 6, lines 14-18 that Heller fails to show, disclose, teach or suggest "...forming a gap..." The Office Action asserts at page 7, lines 8-10 that Goldstein discloses "...(the first probe molecules are inside the gap...)." However, Heller and Goldstein fails to show, disclose, teach or suggest each and every feature of the claims. This is apparent, assuming *arguendo* the Office Action's characterization of Heller is correct, at least since Goldstein merely discloses a single compartment 6 and not a plurality of isolated gaps. This is also apparent, assuming *arguendo* the Office Action's characterization of Heller is correct, at least since Heller would not be modified to include a plurality of isolated gaps in light of the principle of operation described at FIGS. 2A-2B.

Insofar as Heller fails to show, disclose, teach or suggest each and every feature of claim 21, *prima facie* obviousness under 103 cannot be established for claims 21-23, 33-40 and 43. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 21-23, 33-40 and 43.

c) Applicants request reconsideration of the rejection of claims 21-23, 33-40 and 43 under 35 U.S.C. § 103(a) since Heller and Goldstein teach away from the proposed combination.

Claims 22-23, 33-40 and 43 directly or indirectly depend from claim 21. Claim 21 recites "...a first electrolyte solution..." and "...a second electrolyte solution.

The Office Action acknowledges at page 6, lines 19-21 that Heller fails to show, disclose, teach or suggest "...a first electrolyte solution..." and "...a second electrolyte solution..." The Office Action asserts at page 7, lines 10-12 that Goldstein discloses "...compartments 7 and 8 in Fig. 1(b) are filled with appropriate electrolyte solutions)..." Applicants respectfully note that "[i]t is improper to combine references where the references teach away from their combination." M.P.E.P. 2145(X)(D)(2).

Goldstein discloses at least at col. 5, lines 7-30 that "...electric current is continued for a period sufficient to reduce the pH at the interface to a value at which the ligate-ligand complex dissociates..." However, Heller and Goldstein teach away from the proposed combination. This is apparent, assuming *arguendo* the Office Action's characterization of Heller is correct, at least since Heller would not be modified to employ an electrolyte solution for electrophoretically moving analytes toward probe molecules in light of the disclosure of dissociation in Goldstein.

Insofar as the combination of Heller Goldstein teaches away from the proposed combination, *prima facie* obviousness under 103 cannot be established for claims 21-23, 33-40 and 43. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 21-23, 33-40 and 43.

d) Applicants request reconsideration of the rejection of claim 33 under 35 U.S.C. § 103(a) since the combination of Heller, Goldstein and Hsu does not show, disclose, teach or suggest the surface of the first semi-permeable membrane is exposed and activated by plasma prior.

Claim 33 recites "...the surface of the first semi-permeable membrane is exposed and activated by plasma..."

The Office Action acknowledges at page 17, lines 7-8 that Heller in view of Goldstein fails to show, disclose, teach or suggest a surface layer is activated with plasma. The Office Action asserts at page 17, lines 9-14 that "Hsu teaches plasma activation..." Hsu discloses at least at col. 4, lines 39-45 that "[o]n each membrane 5 microliter of enzyme solution is applied to form the sample. The sample is placed in a nitrogen plasma reaction chamber...the enzyme sample is washed..."

However, the combination of Heller, Goldstein and Hsu fails to show, disclose, teach or suggest each and every feature of the claim 33. This is apparent, assuming *arguendo* the Office Action's characterization is correct, at least since Hsu discloses applying an enzyme to the surface of a membrane to create an enzyme membrane, and does not disclose the surface of a membrane is exposed and activated by plasma.

Insofar as the combination of Heller, Goldstein and Hsu fails to show, disclose, teach or suggest each and every feature of claim 33, *prima facie* obviousness under 103 cannot be established for claim 33. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 33.

e) Applicants request reconsideration of the rejection of claim 34 under 35

U.S.C. § 103(a) since the combination of Heller, Goldstein and Bier does not show, disclose, teach or suggest an analyte solution is automatically stabilized against convection due to membrane polarization.

Claim 34 recites "...the analyte solution is automatically stabilized against convection due to membrane polarization..."

The Office Action acknowledges at page 10, lines 16-18 that Heller in view of Goldstein fails to show, disclose, teach or suggest forming a self-forming gradient. The Office Action asserts at page 11, lines 6-8 that Bier discloses "...[a]nother way to stabilize against convective flow is to create a density gradient using an inert solute, such as sucrose (self-forming density gradient)"

However, the combination of Heller, Goldstein and Bier fails to show, disclose, teach or suggest each and every feature of claim 34. This is apparent, assuming *arguendo* the Office Action's characterization is correct, at least since Bier does not disclose an analyte solution is automatically stabilized, but instead requires an inert solute to form a gradient. This is also apparent, assuming *arguendo* the Office Action's characterization is correct, at least since Bier does not disclose an analyte solution is automatically stabilized due to membrane polarization.

Insofar as the combination of Heller, Goldstein and Bier fails to show, disclose, teach or suggest each and every feature of claim 34, *prima facie* obviousness under 103 cannot be established for claim 34. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 34.

f) Applicants request reconsideration of the rejection of Claims 38-40 under 35 U.S.C. § 103(a) since the combination of Heller, Goldstein and Lazar does not show, disclose, teach or suggest glue vapor is removed by providing air through each of the plurality of channels.

Claims 39-40 directly or indirectly depend from claim 38. Claim 38 recites "...glue vapor is removed by directing a flow of air through each of the plurality of channels..."

The Office Action acknowledges at page 15, lines 14-16 that Heller in view of Goldstein fails to show, disclose, teach or suggest membranes are bound to supports by glue. The Office Action asserts at page 17, lines 17-18 that "Lazar teaches known adhesives/glues..."

However, the combination of Heller, Goldstein and Lazar fails to show, disclose, teach or suggest each and every feature of claims 38-40. This is apparent, assuming *arguendo* the Office Action's characterization is correct, at least since Lazar does not disclose glue vapor is removed by directing a flow of air through each of a plurality of channels.

Insofar as the combination of Heller, Goldstein and Lazar fails to show, disclose, teach or suggest each and every feature of the claim 38, *prima facie* obviousness under 103 cannot be established for claims 38-40. Accordingly, Applicants respectfully request withdrawal of the rejection and favorable consideration of claims 38-40.

IV. New Claims 44-50

a) Applicants request favorable consideration of Claims 44-45.

Claims 44 and 45 indirectly depend from claim 21. As presented above, the combination of Heller and Goldstein fails to show, disclose, teach or suggest each and every feature of claim 21 and/or teach away from combination. Insofar as the combination of Heller and Goldstein fails to show, disclose, teach or suggest each and every recitation of claim 21, *prima facie* anticipation under 102 and *prima facie* obviousness under 103 cannot be established for claims 44 and 45. Accordingly, Applicants respectfully request favorable consideration of claims 44 and 45.

Claims 44 and 45 directly or indirectly depend from claim 33. As presented above, the combination of Heller, Goldstein and Hsu fails to show, disclose, teach or suggest each and every feature of claim 33. Insofar as the combination of Heller, Goldstein, and Hsu fails to show, disclose, teach or suggest each and every recitation of claim 33, *prima facie* anticipation under 102 and *prima facie* obviousness under 103 cannot be established for claims 44 and 45. Accordingly, Applicants respectfully request favorable consideration of claims 44 and 45.

Claim 45 directly depends from claim 44. Claim 44 recites "...at least the first support is activated by plasma." However, none of the references cited show, disclose, teach or suggest each and every feature of claims 44 and 45. This is apparent, assuming *arguendo* the Office Action's characterization is correct, at least since none of the references cited show, disclose, teach or suggest at least a first support is activated

by plasma. Insofar as the cited references fail to show, disclose, teach or suggest each and every recitation of claim 44, *prima facie* anticipation under 102 and *prima facie* obviousness under 103 cannot be established for claims 44 and 45. Accordingly, Applicants respectfully request favorable consideration of claims 44 and 45.

b) Applicants request favorable consideration of Claims 46-50.

Claims 47-50 directly depend from claim 45. Claim 46 recites "...a first semi-permeable membrane attached to the bottom of wells of a microplate and adjacent a plurality of channels formed from the wells..."

However, none of the referenced cited show, disclose, teach or suggest each and every feature of claims 46-50. This is apparent, assuming *arguendo* the Office Action's characterization is correct, at least since none of the references cited show, disclose, teach or suggest a first semi-permeable membrane attached to the bottom of wells of a microplate and adjacent a plurality of channels formed from the wells. Insofar as the cited references fail to show, disclose, teach or suggest each and every feature of claim 46, *prima facie* anticipation under 102 and *prima facie* obviousness under 103 cannot be established for claims 46-50. Accordingly, Applicants respectfully request favorable consideration of claims 46-50.

V. Conclusion

For at least the reasons advanced above, Applicants respectfully submit that the application is in condition for allowance and that action is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' agent at the telephone number shown below.

The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment, to Deposit Account No. 50-3212.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time, or credit any overpayment for an extension of time, to Deposit Account No. 50-3212.

Respectfully submitted,

/ Edgar G. Rodriguez, Reg. No. 63,604/
Edgar G. Rodriguez, Reg. No. 63,604

Office of Technology Transfer
George Mason University
4400 University Drive, MSN 5G5
Fairfax, VA 22030
Phone: 703-993-4103
E-mail: ott@gmu.edu
dgrossma@gmu.edu